

REMARKS

Reconsideration and allowance of this application are respectfully requested.

Claims 1-9 are pending in this application, with Claims 1 and 6 being independent. Claims 6-8 are withdrawn from consideration. Claim 1 is amended herein to more clearly recite the features of the claimed invention; support may be found at least at page 17, lines 16-20 of the specification. Claim 3 is amended so as to depend only from Claim 1. Claim 9 is newly added; support for it may be found in the specification at least at page 18, lines 10-25. Applicants respectfully submit that no new matter has been added by the amendments herein.

Claims 1-3 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Yoshino et al. (EP 709,222) and Eguchi et al. (EP 701,904). Claims 1, 4 and 5 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Yoshino et al. and Eguchi et al. in view of Misuda et al. (U.S. Patent No. 5,104,730). Applicants respectfully disagree with these rejections.

Before addressing the merits of the rejections, Applicants believe it will be helpful to review the features of the claimed invention. As recited in Claim 1, the present invention relates to a recording medium comprising a substrate and an ink-receiving layer provided on the substrate. The ink-receiving layer essentially consists of a binder and an alumina hydrate. The alumina hydrate has a boehmite structure and a flat plate form, an average particle thickness of 2.0 to 6.0 nm and a crystallite size of 5.0 to 8.0 nm in a direction of a (020) plane. The crystallite size in the direction of a (020) plane is greater than the average particle thickness by at least 1 nm. The recording medium has a degree of parallelization of 30 to 1,000. In Applicants' view, the cited references do not teach or suggest the claimed invention.

The Examiner asserts that EP 701,904 teaches the criticality of parallelization degree, and that EP 709,222 discloses crystallite size. Although the Examiner notes that these references do not disclose all the features of the claimed invention, the Examiner takes the position that the alumina hydrate disclosed in these references will fall within the scope of the claims because the disclosed methods of producing alumina hydrate are the same as or similar to those of the present specification.

Regarding the parallelization degree, EP 701,904 teaches that the parallelization degree is 1.5 or more. However, the maximum parallelization degree disclosed in the Examples is 3.5. (See Tables 4, 5 and 8 on pages 11 and 13). In contrast, the parallelization degree of the present invention is in the range of 30 to 1000, which provides advantageous effects such as preventing the occurrence of coating defects, curling before printing and curling after printing. (See page 13, lines 10-15 of the specification.) Applicants submit that curling before printing is liable to occur when the parallelization degree is less than 30, while curling after printing is liable to occur when the parallelization degree is higher than 1000. These considerations are neither taught nor suggested in EP 701,904. Rather, the reference states that the effect of having a parallelization degree of 1.5 or more is an increase in the circularity of the printed dots. (See page 4, lines 29-30.)

Regarding the crystallite size, EP 709,222 teaches a recording medium containing alumina hydrate the crystallite size of which is in the range of 6.0 to 10.0 nm in a (020) plane. Applicants submit, however, that EP 709,222 does not teach or suggest the features of the crystallite size of the invention that (1) the average particle thickness is 2.0 to 6.0 nm or that (2)

the crystallite size in the direction of a (020) plane is greater than the average particle thickness by at least 1 nm.

In the present invention, making the crystallite size in the direction of a (020) plane greater than the average particle thickness by at least 1 nm provides advantageous effects such as increasing the ease of orientation when used in a recording medium. (This provides a recording medium having hardly any cracking and dusting.) Applicants note that alumina hydrate with such a high orientation is superior to conventionally-used alumina hydrate, in terms of curling before and after printing, when an ink-receiving layer is formed by using such highly orienting alumina hydrate together with a binder. Applicants further note that the average particle thickness can be determined by visually observing the alumina hydrate particles with a transmission electron microscope. Applicants submit that the above-noted features relating to crystallite size are not taught or suggested in EP 709,222.

The Examiner asserts that the alumina hydrate disclosed in EP 709,222 and EP 701,904 will fall within the scope of the claims, because the production methods of the alumina hydrate in these references are the same as or similar to those of the present invention.

In response, Applicants submit that they have determined that orientation of alumina hydrates can easily be obtained when the average particle thickness is small. Even when the average particle thickness is large, orientation of alumina hydrates can be obtained by performing a rapid cooling treatment in the process of producing the alumina hydrates. Applicants submit, however, that when the average particle thickness is not less than a certain value, orientation of alumina hydrates cannot be obtained even by performing the rapid cooling treatment in the production process; and hence, a recording medium containing such alumina

hydrate shows a parallelization degree below the lower limit of the present invention, which is 30. This is shown in the Examples and Comparative Examples of the present application.

The alumina hydrate with a particle thickness of 5 nm in Example 2 gives a recording medium having a high parallelization degree, namely, 100, without performing the rapid cooling treatment in the production process. (See pages 34-35 and Table 1 at pages 39-40.) In contrast, alumina hydrate with an average particle thickness of 7 nm in Comparative Example 4 shows a parallelization degree of 5, even though the rapid cooling treatment was performed. (See Table 1 at pages 41-42.) Applicants submit that none of the cited references teaches performing a rapid cooling treatment in the process of producing alumina hydrate. Applicants note that although EP 709,222 does not mention the average particle thickness, the crystal thickness stated in the Examples therein is 6.3 nm or more. Accordingly, Applicants submit that alumina hydrates having such a crystal thickness do not provide the parallelization degree of the present invention unless the rapid cooling treatment is performed. It is further noted that all of the parallelization degrees of recording mediums exemplified in EP 701,904 are 3.5 or less.

Accordingly, Applicants conclude that neither EP 709,222 nor EP 701,904 teaches or suggests the claimed invention.

Misuda et al. was cited for teaching the use of a layer of silica powder over a layer of pseudo-boehmite in a recording medium. It is submitted that it does not remedy the deficiencies of the combination of EP 709,222 and EP 701,904.

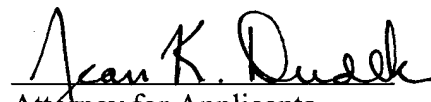
Accordingly, Applicants conclude that none of the cited references, whether taken singly or in combination — assuming such combination is proper — anticipates or renders obvious the present invention as recited in Claim 1.

Applicants submit that the present invention is patentably defined by independent Claim 1. The dependent claims are allowable for the reasons given regarding Claim 1, as well as for the patentable features recited therein. Individual consideration of the dependent claims is respectfully solicited.

The present application is in condition for allowance. Favorable consideration, withdrawal of the Section 103 rejections set forth in the Office Action, rejoinder of the withdrawn claims, and an early Notice of Allowance are respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,


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